SB369
C58

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

Representative of Every Interest

The Citrus Industry

Representing No Special Interest

Citrus Insect Control For October, 1956

Citrus Production Costs And Management Studies

Indian River Citrus League To Meet In Ft. Pierce October 10-11

6th Annual Citrus Processing Conference, Oct. 16, At Winter Haven

Observations On Egyptian Citrus Diseases

Preliminary Program 69th Annual Meeting Florida State Horticultural Society Nov. 7-9, Orlando

Florida Water Resources Study Commission— Its Aims And Resources

Over 700,000 Acres Sprayed In Fruit Fly Fight

Florida Southern College Has Citrus Study Course

Single Copy ..... 15 Cents

Subscription:
$1.00 Per Year In Continental U. S.
$2.00 Per Year Outside

Among Florida Citrus Leaders

DR. A. F. CAMP

Who for the past twenty years has served as Vice-Director in Charge of the Citrus Experiment Station at Lake Alfred, has tendered his resignation effective December 31, 1956.

VOL. 37 — NO. 10 OCTOBER, 1956 BARTOW, FLORIDA

ARAMITE KILLS MITES

within 72 hours...

Citrus yields are better, citrus sales bigger when you apply Aramite. It's today's safest, strongest, most profitable way to combat the ever-present mite menace.

Extensive usage has proved Aramite gives effective immediate and residual control of Purple Mite (Citrus Red Mite) and Six-Spotted Mite on citrus. Recommended by the Florida Agricultural Experiment Station. Aramite is effective against mite adults and nymphs—immediately stops feeding of adults and young and kills within 72 hours. Field usage has definitely established Aramite-Sulfur compatibility—whether Aramite is tank-mixed with wettable sulfur or field-sprayed before or after sulfur dusting or spraying. Safe on citrus, leaves no harmful residue, is non-hazardous to handlers and does not kill off beneficial insects.

Order Aramite from your local supplier today. Write, wire or phone us if unable to locate immediate source of supply.

SEE – Naugatuck Chemical Division, United States Rubber Company, at work on NBC's "Color Spread" TV spectacular, Sunday, March 25, 7:30 PM, EST.

US RUBBER

United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

R. M. Pratt

Citrus Insect Control

R. B. Johnson

For October 1956

W. L. THOMPSON*
R. M. PRATT
R. B. JOHNSON
Florida Citrus Experiment Station, Lake Alfred

W. L. Thompson

Red scale activity was increasing in late September and both population trends and climatological data indicate that this scale will be abundant in the fall months. Infestations will be heavy in many groves, especially in the Ridge, Indian River, and Orlando Districts. The maximum population will occur in late October or early November. The best time for control will be in early October, when most of the scales are in the young stages.

Purple scale activity will increase in October but the level of infestations will be generally low. However, even light infestations on the fruit can cause serious damage at this time of the year.

Purple mite infestations also will be genarally low, but locally heavy infestations can cause serious defoliation. When weather is dry or windy, the injured leaves lose moisture faster than the roots can supply it, and mesophyll collapse and firing may result.

Rust mite activity is high, and will increase in October. These mites are still especially abundant on the fruit.

Brown rot has been reported again this fall and those who are not familiar with this disease and its control can be informed by reading an article by L. C. Knoor, H. J. Reitz and F. J. Reynolds in the September 1956 issue of Citrus magazine.

SPRAY PROGRAM

Many years ago, October was the month when the so-called "clean-up spray" was applied. In more recent years, it has been the practice to control scale and whitefly during the summer so the October spray would not be necessary. However, a certain amount of scale control is necessary each fall. Since red scale will be a problem this fall, particular attention should be paid to this species of scale. Purple scale should not be overlookd, however.

Red scale is most likely to be a problem where the scalicide was applied before mid-July. When checking for red scale, examine the whole tree because infestation may be spotted. On young trees, examine the skirts of the trees and inside fruit, especially where the cover crop was growing up through the foliage when the scalicide was applied. An abundance of weeds and grass prevents thorough coverage of the leaves.

When checking for purple scale, examine the green twigs, especially where there are no symptoms of scale on the leaves. Fruit should also be examined. If there is an excess of scale around the stem-end, the fruit may drop prematurely. If either living purple or chaff scales are on the fruit, the area where the scale has settled will not degreen in the coloring room. The green spotting caused by the scale is a grade lowering factor and infestations of either purple or chaff scale should be controlled well ahead of the picking date. Pay particular attention to tangerines because bright, uniform color is important.

Scale Control: Parathion (15%) or its equivalent at 1.7 pounds per 100 gallons is recommended at this time of the year. Malathion (25%) at 3 to 5 pounds per 100 gallons may also be used. Sulfur and miticides may be combined with either of these materials.

Oil emulsions are not recommended because they will retard degreening and may prevent the formation of the maximum amount of solids. The use of an oil spray is more hazardous at this time where an application was applied in June or later. The adverse effects on solids and degreening are more pronounced where two oils are applied and much more damage to trees is likely to occur if freezing weather develops. Fall oil sprays may also affect the trees so that the normal amount of bloom will not develop next Spring.

Purple Mite Control: Results of research as well as observation of grower practices have shown that most failures to control purple mite are due to improper application of control measures. Of course, rainfall soon after spraying can reduce the interval of control, but most failures are the result of false economy in the form of poor coverage, sprays applied after mites reach high population levels or a combination of both. Best and, in the long run, cheapest control of purple mite is obtained from thorough coverage of all leaf and twig surfaces with application made before more than 20 per cent of the leaves are infested.

There are a number of miticides that are satisfactory for October use. DN Dry Mix No. 1 at 2/3 pound per 100 gallons is the cheapest miticide,

(Continued on page 22)

SCALE AND MITE ACTIVITY BY DISTRICTS*

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves	Rust Mite on fruit
West Coast	3.93	3.41	.58	2.17	2.50
Indian River	3.81	3.56	1.19	1.61	2.17
Upper East Coast	3.04	1.75	.25	1.50	1.88
Gainesville	2.34	.34	—.17	—.25	—.25
Orlando	2.73	3.53	.29	.29	1.00
Brooksville	2.79	2.34	.33	1.75	1.50
Ridge	3.27	4.26	1.34	1.38	2.54
Bartow	3.98	3.30	.45	1.90	2.70
State Average	3.28	3.31	.66	1.44	1.94
Last Year	3.22	2.70	.74	1.44	1.96

* Third week in September. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

* Written September 24, 1956. Reports of surveys by Harold Holtsberg, Cocoa; J. W. Davis, Tavares, K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. M. Sutton, Lake Alfred.

Dr. Reitz Named Head Of Citrus Experim't Station

DR. HERMAN J. REITZ

Dr. Herman J. Reitz, who has been a member of the staff at the Citrus Experiment Station at Lake Alfred for the past ten years, has been named Vice Director in Charge of the Station, succeeding Dr. A. F. Camp, who has resigned. Dr. Reitz has been horticulturist with the Station for a number of years. He will take up his duties as head of the Station on January 1, 1957. Dr. Reitz is no relation of Dr. J. Wayne Reitz, president of the University of Florida.

OUTLOOK COMMITTEE SEES AMPLE CREDIT AHEAD FOR FARMERS

Ample credit is available to Florida farmers in the year ahead. "It looks like the farmers are in a better credit situation this year than they were last year," a report released by the University of Florida Agriculturol Extension Service declares.

Short-term credit for qualified farmers is available from banks, Production Credit Associations, and FHA. Long-term credit is provided by individuals, life insurance companies, commercial banks, the Federal Land Bank and the FHA. The committee believes interest rates are likely to stay the same.

The chief demand for credit by Florida farmers will be for the usual operating requirements and mechanizing.

The Best CITRUS Growers Agree...

Use Gulf Brand Fertilizers For Better Yields

For over half a century, Gulf Fertilizer has helped Florida Growers get top yields from citrus.

Painstaking research, careful analysis of experiment station studies and manufacture of fertilizers containing the growth elements vital to Florida's high-profit farming . . . these are the things behind Gulf's crop-producing power!

There's a balanced Gulf analysis to meet your exact need . . . a Gulf Fertilizer to help you earn bigger income from citrus.

Order Gulf Brands Fertilizer now! See for yourself why the Best Growers use Gulf Brands for citrus!

FRIENDLY GULF FERTILIZERS and pesticides

THE GULF FERTILIZER COMPANY
Tampa, Florida

MORE THAN 53 YEARS SERVICE TO FLORIDA AGRICULTURE

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

Publication office at Bartow, Florida. Entered as second class matter February 16, 1920, at the post office at Tampa, Florida, under act of March 3, 1879. Entered as second class matter June 19, 1933, at the post office at Bartow, Florida, under act of March 3, 1879.

Preliminary Program 69th Annual Meet Florida State Horticultural Society

Nov. 7-9, 1956, Angebilt and San Juan Hotels, In Orlando, Florida . . .

Evening Session

Wednesday Evening, November 7, 8:00 P. M.

R. A. Carlton, President Presiding

Invocation — Rev. M. McCoy Gibbs. Broadway Methodist Church, Orlando.

Address of Welcome — Hon. Robert S. Carr, Mayor-Elect, City of Orlando.

Response to Address of Welcome — R. S. Edsall, Vero Beach

President't Address — R. A. Carlton, West Palm Beach.

General Session

Thursday Afternoon, November 8, 1956

R. A. Carlton, President Presiding

Plant Research in the Atomic Age — Dr. George L. McNew, Director, Boyce Thompson Institute for Plant Research, Inc., Yonkers, N. Y.

Mediterranean Fruit Fly — Ed L. Ayers, Plant Commissioner, State Plant Board, Gainesville.

G. G. Rohwer, Area Supervisor, U. S.D.A. Plant Pest Control Branch, Miami.

Annual Banquet

Thursday Evening, November 8, 7:00 P. M.

Toastmaster — Frank L. Holland, Winter Haven

CITRUS SECTION

C. A. Root, Vice President, Presiding

Wednesday Afternoon, November 7,

2:00 — Injury and Loss of Citrus Trees Due to Tristeza Disease in an Orange County Grove. Mortimer Cohen, State Plant Board, Gainesville.

2:20 — The New Youth Program in Citrus Production. Jack T. McCown, Agricultural Extension Service Gainesville.

2:35 — Preliminary Report on Tree Removal in Closely Spaced Bearing Groves. Fred P. Lawrence, Agricultural Extension Service, Gainesville.

3:00 — Intermission.

3:10 — Seasonal Changes in the Juice Content of Pink and Red Grapefruit. E. J Deszyck and S. V. Ting, Citrus Experiment Station, Lake Alfred.

3:30 — Timing of Fertilizer Under Indian River Conditions. H. J. Reitz, Citrus Experiment Station, Lake Alfred.

3:50 — Is Stem Pitting of Grapefruit A Threat to the Florida Grower? L. C. Knorr and W. C. Price, Citrus Experiment Station, Lake Alfred.

4:10 — Sectional Business Meeting.

Thursday Morning, November 8

9:30 — Starting and Maintaining Burrowing Nematode Infected Citrus Under Greenhouse Conditions. W. A. Feder and Julius Feldmesser, U. S.D.A., Orlando.

9:40 — The Use of Nemagon on Living Citrus Trees Infected with the Burrowing Nematode. Julius Feldmesser and W. A. Feder, U.S.D.A., Orlando.

9:50 — The Effect of Applied Phosphate on Citrus Root Density, Soil pH and Certain Chemical Constituents at Different Depths in Sandy Soil. Paul F. Smith, U.S.D.A., Orlando.

10:20 — Intermission.

10:30 — Factors Influencing Young Citrus Tree Die-back and Its Control. Gordon R. Grimm, U.S.D.A., Orlando.

10:55 — Transmission of Tristeza Virus by Aphids in Florida. Paul A. Norman and T. J. Grant, U.S.D.A, Orlando.

11:15 — Progress Report on Greasy Spot Control. W. L. Thompson, Citrus Experiment Station, Lake Alfred.

Friday Morning, November 9

9:30 — Increased Utilization of Grapefruit Through Improvements in Quality of Processed Products. F. W. Wenzel and E. L. Moore, Citrus Experiment Station, Lake Alfred.

9:30 — Physiological Races of the Burrowing Nematode. E. P. Du-

Charme, Citrus Experiment Station, Lake Alfred.

10:10 — Effectiveness of Different Zinc Fertilization on Citrus. C. D. Leonard and Ivan Stewart, Citrus Experiment Station, Lake Alfred.

10:30 — Intermission.

10:40 — The Possibility of Mechanical Transmission of Nematodes in Citrus Groves. A. C. Tarjan, Citrus Experiment Station, Lake Alfred.

11:00 — Citrus Rootstock Selections Tolerant to the Burowing Nematode. Harry W. Ford, Citrus Experiment Station, Lake Alfred.

11:20 — Notes on the Use of Systox for Purple Mites. R. B. Johnson, Citrus Experiment Station, Lake Alfred.

VEBETABLE SECTION

Louis F. Rauth, Vice President Presiding

2:00 — Report on Cantaloupe Varieties. Ben F. Whitner, Central Florida Experiment Station, Sanford.

2:20 — Research Work on Control of Cantaloupe Diseases. Robert A. Conover, Sub-Tropical Experiment Station, Homestead.

2:40 — Rates of Seeding and Fertilization of White Potatoes in Hastings Area. E. N. McCubbin, Potato Investigations Laboratory, Hastings.

3:00 — Effects of Irrigation on Yield and Quality of White Potatoes in Hastings Area. D. L. Myhre, Potato Investigations Laboratory, Hastings.

3:20 — Progress Report on Use of Herbicides in Fields of Growing Tomatoes. John C. Noonan, Sub-Tropical Experiment Station, Homestead.

3:40 — Production of Spinach for Processing on Muck Soils of Central Florida. M. M. M. Hooper, Vegetable Grower, Apopka.

4:00 — Crop Production in Soil Fumigated with Crag Mylone as Affected by Rates Application Methods and Planting Dates. D. S. Burgis and A. J. Overman, Gulf Coast Experiment Station, Bradenton.

4:20 — Sectional Business Meeting.

Thursday Morning, November 8

9:00 — Breeding Objectives and the Establishment of New Breeding Lines of Field Peas. A. P. Lorz, Agricultural Experiment Station, Gainesville.

9:20 — Variety Testing of Breeding Lines and Standard Varieties of Field Peas. L. H. Halsey, Agricultural Experiment Station, Gainesville.

9:40 — Factors Influencing Consumer Preference of Southern Field Peas. M. W. Hoover, Agricultural Experiment Station, Gainesville.

10:00 — Outlook for Production of Southern Field Peas for Freezing. James Montelaro, Vegetable Research, Minute Maid Corp., Plymouth.

10:20 — Outlook for Production of Southern Field Peas for Canning. Allen Markham, Markham Bros. Canning Co., Okeechobee, or Logan Bloodworth, Cherokee Products Co., Haddock, Ga.

10:40 — Insect Problems in the Production of Southern Field Peas. John W. Wilson, Central Florida Experiment Station, Sanford.

11:00 — Influence of Nitrogen, Phosphorus, Potash and Lime on the Growth and Yield of Strawberries. R. A. Dennison and C. B. Hall, Agricultural Experiment Station, Gainesville.

11:20 — Lime-Induced Manganese Deficiency of Strawberries. C. B. Hall and R. A. Dennison, Agricultural Experiment Station, Gainesville.

Friday Morning, November 9

9:00 — Cucumber Fungicides for the West Coast of Florida. Grover Sowell, Jr., Gulf Coast Experiment Station, Brandenton.

9:20 — Recent Developments on the Control of Botrytis or Gray Mold on Tomatoes. R. S. Cox and Norman C. Hayslip, Everglades Experiment Station, Belle Glade.

9:40 — Evalucation of Control Methods for Blackheart of Celery and Blossom-end Rot of Tomatoes. C. M. Geraldson, Gulf Coast Experiment Station, Bradenton.

10:00 — Control of Diseases in the Celery Seedbed. R. S. Cox, Everglades Experiment Station, Belle Glade.

10:20 — The Assay of Streptomycin as it Relates to the Field Control of Certain Vegetable Diseases. Grover Sowell, Jr., Gulf Coast Experiment Station, Bradenton.

10:40 — Fungicidal, Herbicidal and Nematocidal Effects of Fumigants Applied to Vegetable Seedbeds on Sandy Soils. A. J. Overman and D. S. Burgis, Gulf Coast Experiment Station, Bradenton.

11:00 — The Influence of Boron on the Carbohydrates of Beans and Corn. W. M. Dugger, Jr., T. E. Humpreys and M. W. Hoover, Agricultural Experiment Station, Gainesville.

KROME MEMORIAL SECTION

Roy O. Nelson, Vice President Presiding

Wednesday Afternoon, November 7,

2:00 — Some Aspects of the Lychee as a Commercial Crop. Gordon Palmer, President, Florida Lychee Growers Association. Palmer Nurseries, Osprey.

2:20 — Branch Girdling Trials with Lychee. T. W. Young, Sub-Tropical Experiment Station, Homestead.

2:40 — Notes on a Weevil Attacking Mahogany. F. G. Butcher and Seymour Goldweber, University of Miami, Coral Gables.

3:00 — The Concept, Duties, and Operations of the Florida Avocado and Lime Commission. C. F. Ivins, Manager, Florida Avocado and Lime Commission, Homestead.

3:40 — Marketing of Avocados and Limes. Harold E. Kendall, Harold E. Kendall, Inc., Goulds.

4:00 — Some observation of Grove Culture and Maintenance in Dade County. Norman E. Sutton, Harold E. Kendall, Inc., Goulds.

4:20 — Future of Florida Minor Tropical Fruit Industry in Doubt. Nixon Smiley, Farm and Garden Editor, Miami Herald, Miami.

4:40 — Sectional Business Meeting.

Thursday Morning, November 8

9:30 — Pollination Studies of the Minneola Tangelo. Margaret J. Mustard, University of Miami, Coral Gables.

9:50 — Rooting of Peach Cuttings Under Mist as Affected by Media and Potassium Nutrition. Mario Jalil, Escuela Agricola Panamericana, Tegucigalpa, Honduras, and R. H. Sharpe, Agicultural Experiment Station, Gainesville.

10:10 — Changes in Physical Characters and Chemical Constituents of Haden Mangos During Ripening at 80°F. Mortimer J. Soule, Jr., and Paul L. Harding, U. S. D. A., Orlando.

10:40 — Avocado Variety Committee Report. F. B. Lincoln, Chairman, Krome Memorial Avocado Variety Committee, Homestead.

11:00 — A Report of the Florida Mango Forum Activities. William Wooten, President, Florida Mango Forum, Miami.

11:20 —

11:40 — Further Rooting Trials of Barbados Cherry. Roy O. Nelson and Seymour Goldweber, University of Miami, Coral Gables.

Friday Morning, November 8

9:30 — The Florida Sweet Barbados Cherry. H. Bruce Ledin, Sub-Tropical Experiment Station, Homestead.

9:50 — Rare Fruit Council Activities, 1955-56. William F. Whitman, Chairman, Rare Fruit Council, a tropical fruit study group of Miami.

10:15 — Research on Sub-Tropical Fruit Problems Arising from Mediterranean Fruit Fly Eradication Program. George D. Ruehle, Sub-Tropical Experiment Station, Homestead.

10:35 — Some Observations on Fruit Culture in Central America. Wilson Poponoe, Escuela Agricola

Panamericana, Tegucigalpa, Honduras.

10:55 — Some Effects of Nitrogen, Phosphorus and Potassium Fertilization on the Growth, Yield, and Fruit Quality of Persian Limes. Seymour Goldweber, Manly Boss, S. John Lynch, University of Miami, Coral Gables.

11:15 — Some Effects of Nitrogen, Phosphorus and Potassium Fertilization on the Yield and Tree Growth of Avocados. S. John Lynch and Seymour Goldweber, University of Miami, Coral Gables.

11:35 — The Sub-Tropical Fruit Program of Dade County. John D. Campbell, County Agricultural Agent. Homestead.

ORNAMENTAL SECTION

T. J. Sheehan, Vice President Presiding

Wednesday Afternoon, November 7

2:00 — Gladiolus Botrytis Control. R. O. Magie, Gulf Coast Experiment Station, Bradenton.

2:20 — Fertilization of Gladiolus. S. S. Woltz, Gulf Coast Experiment Station, Bradenton.

2:40 — The Effect of Parathion as a Corm and Soil Treatment for Gladiolus. E. G. Kelsheimer, Gulf Coast Experiment Station, Bradenton.

3:20 — Virus Ring Spot **Pepromia obtusifolia** var. **variegata.** M. K. Corbett, Agricultural Experiment Station, Gainesville.

3:00 — Studies on the Nutritional Requirements of Chrysanthemums. S. S. Woltz, Gulf Coast Experiment Station, Bradenton.

3:40 — Weed Control in **Asparagus plumosa.** E. O. Burt, Agricultural Experiment Station, Gainesville.

4:00 — Sectional Business Meeting.

Thursday Morning, November 8

9:00 — The Genus **Solandra** in Florida. R. D. Dickey, Agricultural Experiment Station, Gainesville.

9:20 — Notes on Some Philadendron Hybrids. E. West and H. N. Miller, Agricultural Experiment Station, Gainesville.

9:45 — Twelve Bauhinias for Florida. R. Bruce Ledin, Sub-Tropical Experiment Station, Homestead.

10:05 — How to Landscape Our Outdoor Space for Living. T. R. Mack, Florida Southern College, Lakeland.

10:35 — Regional Performance of Hemerocallis. Eunice T. Knight, Apopka.

11:00 — The Palm Society. Dent Smith, Daytona Beach.

11:20 — The Florida Flower and Nursery Industry. C. N. Smith, Agricultural Experiment Station, Gainesville.

Friday Morning, November 9

9:00 — Phytotoxicity Studies on Ornamental Plants:

A. Pesticides and Plant Injury. S. H. Kerr, Agricultural Experiment Station, Gainesville.

B. Fungicides and Plant Injury. J. Tammen, State Plant Board, and H. N. Miller, Agricultural Experiment Station, Gainesville.

10:00 — Mist propagation of Roses. S. E. McFadden, Agricultural Experiment Station, Gainesville.

10:15 — Comparison of "Happiness" Rose Production on Four Rootstocks. S. E. McFadden, Agricultural Experiment Station, Gainesville.

10:30 — Florida Nursery Law. Paul Frierson, State Plant Board, Gainesville.

10:45 — Research in the Ornamental Field in Control of Med Fly. E. W. McElwee, Agricultural Experiment Station, Gainesville.

11:00 — The Hunting Billbug, A serious Pest of Zoysia. E. G. Kelsheimer, Gulf Coast Experiment Station, Bradenton.

Papers to be presented before the

PROCESSING SECTION

of the

Florida State Horticultural Society

at its annual meeting

November 7 thru 9, 1956

R. D. Gerwe, Presiding

Vacuum Cooling Florida Vegetables. R. K. Showalter and B. D. Thompson, Agricultural Experiment Station, Gainesville.

Rapid Determination of Peel Oil in Orange Juice for Infants. R. W. Kilburn and L. W. Petros, Florida Citrus Canners Coop., Lake Wales.

Effect of Finisher Pressure on Charactertistics of Valencia Orange Concentrate. O. W. Bisset and M. K. Veldhuis, U. S. Citrus Products Station, Winter Haven.

A Study of Degrees Brix and Brix-Acid Ratios of Grapefruit Utilized by Florida Citrus Processors for the Seasons 1952-53 thru 1955-56. E. C. Stenstrom and G. F. Westbrook, Citrus and Vegetable Inspection Bureau, State Department of Agriculture, Winter Haven.

Prevention of Corrosion of Cans by Sodium Nitrate. James R. Marshall, American Can Company, Winter Haven.

Quality Control of Chilled Orange Juice from the Tree to the Consumer. James Lister, Halco Corporation, Fairville, and Arthur C. Fay, H. P. Hood & Sons, Boston, Mass.

Hydrocooling Cantaloupes. K. E. Ford, Georgia Experiment Station, Ga.

Standardization of Florida Citrus Products. Arthur R. Pobjecky, Concentrates Division, Southern Fruit Distributors, Inc., Orlando.

Diacetyl Production in Orange Juice by Organism in a Continuous Culture System. L. D. Witter, Continential Can Co., Inc., Chicago, Ill.

Citrus Vitamin P. Boris Sokoloff and Isidor Chemelin, Florida Southern College, Lakeland.

The Sloughing Disease of Grapefruit. W. Greirson and R. Patrick, Citrus Experiment Station, Lake Alfred.

Reducing Losses in Harvesting and Handling of Tangerines. W. Grierson, Citrus Experiment Station, Lake Alfred.

Effect of Variety and Storage Upon the Quality of Frozen Sweet Potatoes. W. Hoover and F. Nettles, Agricultural Experiment Station, Gainesville.

Effect of Thermal Treatment and Concentration on Pectinesterase, Cloud and Pectin in Citrus Juices Using a Plate Type Heat Exchanger. C. D. Atkins, Florida Citrus Commission, A. H. Rouse, Citrus Experiment Station, and E. L. Moore, Florida Citrus Commission, Lake Alfred.

Storage Studies of 42° Brix Concentrated Orange Juice Processed from Juices Heated at Varying Folds. I. Physical Changes and Retention of Cloud. E. L. Moore, Florida Citrus Commission, A. H. Rouse, Citrus Experiment Station, and C. D. Atkins, Florida Citrus Commission, Lake Alfred.

Storage Studies on 42° Brix Concentrated Orange Juices Processed from Juices Heated at Varying Folds. II. Chemical Changes with Particular Reference to Pectin. A. H. Rouse, Citrus Experiment Station, C. D. Atkins and E. L. Moore, Florida Citrus Commission, Lake Alfred.

Purification of Narigen. R. Hendrickson and J. W. Kesterson, Citrus Experiment Station, Lake Alfred.

Quality of Canned Grapefruit Sections from Plots Fertilized with Varying Amounts of Potash. F. W. Wenzel, et al., Citrus Experiment Station, Lake Alfred.

Spuds Johnson says one trouble with anger is it makes your mouth work faster than your mind.

International's Premium

RAINBOW®

4plus PLANT FOOD

BEST for Citrus

Rainbow is International's *new* Premium fertilizer . . . made of materials not found in fertilizers bought on price alone . . . materials that supply more of *all* the nutrients needed to produce top-quality citrus of good color and fine flavor.

These additional and more expensive plant food materials naturally cost more to produce. However, the greater profit you net from your crop, substantially outweighs the slight extra cost over ordinary fertilizers.

When you switch to Rainbow Premium Plant Food this fall, order enough for top production . . . it pays in more and better fruit.

1. **Rainbow has *all*** the nutrients for abundant plant growth, including more of the iron, magnesium, calcium, boron, water soluble nitrogen, phosphate and potash needed for healthier plants.
2. **Rainbow has *all*** plant foods in proper balance, and *all* in the right proportion for maximum yields.
3. **Rainbow has *all*** its plant foods available to supply your crops with nutrients as needed.
4. **Rainbow has *all*** its plant foods in excellent mechanical condition. Drills easily, flows freely.

PROVED BY RESEARCH
An *International*
4-PLUS
PLANT FOOD
PROTECTED BY QUALITY CONTROL

+ NUTRIENTS
+ BALANCE
+ AVAILABILITY
+ CONDITION

For Satisfaction at Harvest Time

See Your Dealer

There's an International dealer near you with Premium Rainbow Plant Food, and other International Fertilizers for fall delivery.

Plant Food Division
INTERNATIONAL MINERALS & CHEMICAL CORPORATION
General Offices: 20 N. Wacker Drive, Chicago 6, Illinois
MULBERRY, JACKSONVILLE and PENSACOLA, FLORIDA

Florida Citrus Receiving Favorable Support Abroad

The Florida citrus industry is receiving increasing portions of assistance in foreign countries from journalists, nutritionists, home economists and newspaper and magazine editors, according to the Florida Citrus Commission.

Increasing favorable publicity for citrus products is appearing in columns and news items in Europe with particular frequency in Sweden, where the FCC's newest foreign representative is headquartered.

"The Swedes have known for a long time that the Americans would not think of starting the day without a glass of orange or grapefruit juice," says one Swedish magazine. "We saw them drink juice in the movies, but thought it was a luxury. When we went to the Continent, we often ordered a glass of juice with our breakfast in the hotel. When we came back to Sweden, we somehow forgot about the delicious juices. A small can of orange juice costs less than 26 cents and contains .53 liters. It would be a good thing if we could get away from the Swedish snacks and sweet drinks and substitute pure natural juices instead."

Another publication, the Foreningen Fruktdrycker, lists favorite citrus recipes and features one receipe which included the juice from two oranges, to which is added lemon juice and sugar, and decorated with orange slices to be served ice cold.

Sweden's largest Food Trade paper, the "Fri Kopenskap", headlined a recent issue with the recommendation, "Say 'yes' to Juice Sales." The story went on to say that a recent promotional campaign had increased juice business by more than 300 per cent. "When customers realize that one can of juice contains more juice than three oranges, they quickly understand that it is cheaper to buy the canned product," the article concluded.

Another magazine, the "ICA Tidningen," gave this report from a grocer in Nykoping, Sweden: "Two hundred and fifty cans of juice per month I have been selling for some time. But I plan to at least double this during the summer. Juice is definitely the best summer item.

The FCC says that similar articles are appearing almost weekly in Sweden. Such favorable reaction to Florida citrus moved one FCC staffer to comment: "Most of this copy reads as though it were part of one of our U. S. ads for Florida citrus."

Citrus Production Costs And Management Studies

. . . By The . . .
UNIVERSITY OF FLORIDA, AGRICULTURAL ECONOMICS DEPARTMENT

ZACH SAVAGE, ECONOMIST, IN CHARGE

1. Citrus Production Cost Reports

Records showing costs and management practices are obtained each year from approximately 200 citrus groves located in all important citrus production areas of the state. Collecting the records requires more than six months each year. Tabulation and analysis of the information begins as soon as the first records are in, but is not completed until about three months after the last ones are obtained. As a result, a report is released about April of each year which summarizes information for the season that ended the previous August.

These reports have been issued for 23 years. It is the longest series of production cost reports, involving such a large sample of growers, that exists anywhere in the country. Florida can be proud of the fine work being done in this field of citrus production costs and of the knowledge gained over such a long period.

The latest report in the series is: Agricultural Extension Service Economics Series 56-1 "Twenty-Three Years of Citrus Costs and Returns in Florida, 1931-1954," dated April 1956, by Zach Savage, Agricultural Economist.

The latest report in the series showed that the average cost of citrus production, for citrus groves over 10 years of age during the 1953-54 season, including 6% interest on investment, was 55 cents per box (90 lb. field box). The trees in these record groves during the 1953-54 season averaged 28.6 percent grapefruit, and 447 boxes of citrus was harvested per acre.

Labor, power and equipment costs were 19 cents per box, fertilizer materials 14 cents, spray materials 4 cents, taxes and miscellaneous costs another 4 cents, and interest on investment at 6% was 14 cents, making a total of 55c per box. Returns from fruit averaged 72 cents per box on the tree leaving 17 cents net returns per box above interest.

Adding the 14 cents per box interest charge to this 17 cents gives 31 cents per box returns above operating cost before any deduction is made for owner supervision. If the owners valuation of the groves is considered as correct, this 31 cents per box would represent about a 14 percent return on investment. If present sales value of the groves was used as the valuation, the 31 cents would be less than a 10 percent return on investment.

2. Yearly Report on Movement of Citrus Trees From Florida Nurseries.

All Florida nurserymen are required by state law to furnish the State Plant Board a report on the number and variety of citrus trees moved from nurseries for planting. The State Plant Board makes these reports available to the University Agricultural Economics Department for tabulation and analysis.

Figures are available on such citrus tree movements for each season since 1928-1929, or 27 seasons through 1954-55. Zach Savage and his office force assemble, tabulate and analyze these figures each year between August and October, and a report is then issued each year in December. The latest report in this series is:

Agricultural Economics Mimeo Report 56-4, Movement of Citrus Trees From Florida Nurseries, July 1, 1928 to June 30, 1955, dated December 1955 by Zach Savage, Agricultural Economist.

Everyone who has driven through Central Florida in recent years has seen large acreages of new citrus plantings. This latest report on citrus tree movement from nurseries gives us the best measure we have of the extent of these plantings and what proportion are of the various types and varieties of citrus.

From the most recent report we learn that citrus trees moved from nurseries between July 1, 1954 and June 30, 1955 totaled 1,926,829. Of this total, 1,445,932, or about 75 percent, were orange trees, but only 90,426, or less than 5 percent, were grapefruit trees. There were 186,357 Mandarin trees, 71,559 lime, 63,333 lemon, 46,035 tangelo and 23,187 other type citrus trees.

The predominant variety of orange trees moving from nurseries during 1954-55 was Valencia, 861,525 trees or about 60 percent of all orange trees. The Pineapple was next in importance with 297,663, about 20 percent, and Hamlin third with 106,907 or about 7 percent. Of less importance was Navels 75,776, Parson Brown 58,858, Lue Gim Gong 10,367, Pope Summer 8,191 and "other oranges" 26,645.

It is both interesting and important to notice the trend in movement of citrus trees from nurseries. The size of the crop any one year may be influenced considerably by the plantings made several years before. Space does not permit the description of these trends here, but figures in this latest report, on movement of citrus trees from nurseries, will reveal the extent to which movement of trees is affected by good prices for various types and varieties of citrus.

Anyone interested in having their names placed on the mailing list to receive each year either the citrus cost of production report or the citrus trees movement should write Zach Savage, Agricultural Economics Department, University of Florida, Gainesville.

3. Grove Management Reports

Each year, one or two grove management reports are published by Mr. Savage as a result of management information gleaned from the cost ac-

(Continued on Page 10)

Sixth Annual Citrus Processing Conference, Oct. 16, Winter Haven

Recent developments in citrus research will be presented during the Sixth Annual Processing Conference, to be held in the Florida Room of the Citrus Building, Winter Haven, Tuesday, Oct. 16. Representatives from U. S. Department of Agriculture laboratories in the three major citrus-producing areas of the country will participate in the program, including the Citrus Products Station at Winter Haven; the Fruit and Vegetable Chemistry Laboratory, Pasedena, Cal., and the Fruit and Vegetable Products Laboratory, Weslaco, Texas.

The conference will be open to members of the citrus and related industries, to research workers, and others interested in citrus processing. The morning session will begin at 9:30, and the afternoon session at 1:30. Complete information regarding the meeting may be obtained from Dr. M. K. Veldhuis, U. S. Citrus Products Station, Winter Haven.

These annual conferences are sponsored by the Citrus Products Station, which is now completing 25 years of service to the citrus industry. Their primary purpose, according to Dr. G. E. Hilbert, Director of Utilization Research, Agricultural Research Service, USDA, Washington, is to inform the industry of progress in scientific research on citrus processing. Such is intended to increase the market for citrus by enabling the processor to offer the consuming public products of better quality, and by development of new products, Dr. Hilbert said.

Dr. William L. Stanley, of the Pasedena laboratory, is to present a paper on "Coumarin Compounds of California Lemon Oils," and Dr. E. A. Beavens, Head of that laboratory will review its citrus program in general. Dr. F. P. Griffiths, who is in charge of the Weslaco laboratory, will present the third in a series of papers on the processing characteristics of colored Texas grapefruit, "Spectophotometric Methods for Determining Pigmentation in Ruby Red Grapefruit."

Recent work on the heat treatment of orange juices at different concentrations in the preparation of frozen concentrate will be discussed by Owen W. Bissett, of the Citrus Products Station. These heat treatment investigations are part of the work undertaken under a cooperative project by the USDA and the Continental Can Co., Inc., Chicago.

Other papers to be presented by members of the staff of the Citrus Products Station will include one by Dr. Lyle J. Swift on constituents of orange peel that contribute bitterness to juices. Dr. Vincent J. Senn will discuss studies on bitterness in grapefruit juice, and also present observations on the mechanism of diacetyl synthesis by **Lactobacilli** and **Leuconostic.** Donald A. Morgan will present a paper on "Estimations of Suspended Matter and Non-Volatile Material in Citrus Concentrates and Their Correlation with Refractometer Values."

Morning Session — 9:30 A. M.

Bitterness of Orange Peel. A Progress Report. Lyle J. Swift. U. S. Citrus Products Station.

Investigations Related to Bitter Substances in Grapefruit Juice. Vincent J. Senn and Theo. J. Kew, U. S. Citrus Products Station.

Coumarin Compounds of California Lemon Oils. Wm. L. Stanley and Sadie H. Vannier. U. S. Fruit and Vegetable Chemistry Laboratory, Pasadena, Calif.

Observations on the Mechanism of Diacetyl Synthesis by Lactobacilli and Leuconostoc. N. B. Rushing and Vincent J. Senn, U. S. Citrus Products Station.

Review of Citrus Program of the Pasadena Laboratory. E. A. Beavens, U. S. Fruit and Vegetable Chemistry Laboratory, Pasadena, Calif.

Afternoon Session — 1:30 P. M.

Stability of Frozen Concentrated Orange Juice. Heat Stabilization at Different Concentrations. Owen W. Bissett and M. K. Veldius, U. S. Citrus Products Station. Richard B. Guyer and E. A. Carroll, Continental Can Co., Chicago.

Processing Characteristics of Colored Texas Grapefruit. III. Spectrophotometric Methods for Determining Pigmentation and Beta Carotene and Lycopene in Ruby Red Grapefruit. Robert T. O'Connor, Dorothy C. Heinzelman and Elizabeth R. McCall, Southern Regional Research Laboratory. New Orleans, La.; Francis P. Griffiths and Bruce J. Lime, Fruit and Vegetable Products Laboratory, Weslaco, Texas.

Studies on Determining Soluble Solids in Citrus Juices by the Refractometer. Donald A. Morgan and W. Clifford Scott, U. S. Citrus Products Station.

Estimations of Suspended Matter and Non-Volatile Material in Citrus Concentrates and Their Correlation with Refractometer Values. W. Clifford Scott, U. S. Citrus Products Station.

CITRUS PRODUCTION COSTS AND MANAGEMENT STUDIES

(Continued from Page 9)

count records which successful grove owners make available to him. Some of the latest citrus management reports that are still available include:

"Cost of Planting and Developing Florida Citrus Groves Through 10 Years of Age." Ag. Ext. Service Ec Series 56-3.

"Citrus Grove Records." Ag. Ext. Service Economics Series, 55-3.

"How Many Citrus Trees Per Acre." Ag. Ext. Service Ec Series, 55-2.

"Does Irrigation Pay On Your Grove." AE Series No. 54-8.

"Should I Buy A Citrus Grove." Ext. Circular 119-R. Revised 1956.

Mr. Zach Savage is the author on all of these. Copies may be obtained by writing directly to him.

GOVERNOR NAMES OCT. 21-27 CITRUS CANNERS WEEK

Recognizing the importance of the citrus industry to the State of Florida and taking cognizance of the important part played in the industry by the canning industry, Governor Leroy Collins has issued a proclamation declaring the week of October 21-27 as Citrus Canners Week.

The Governor calls upon all the citizens of Florida to take part in the observance of this week by the increased use of citrus fruits and citrus products and to show their appreciation of the great value of the industry to the State by joining in every effort to promote and encourage the industry. The Governor well says:

"The State of Florida, through the enterprise and foresightedness of its growers, processors and allied industries, has become world renowed for the health-giving fruit of its groves, and the vast canning and freezing industries, has made possible the widespread distribution of Florida citrus products throughout the world, returning nearly $350,000,000 yearly to the economy of the State."

Observations On Egyptian Citrus Diseases

J. F. L. CHILDS 1/, FARID NOUR ELDIN 2/ AND NASR EL-DIN EL-HOSSEINY 3/

DR. J. F. L. CHILDS

Introduction

In 1955 the Egyptian Government invited the author to visit Egypt to study diseases of citrus trees and to suggest control measures. Under the auspices of the International Cooperation Administration of the United States Government, it was arranged for the author to visit Egypt for 6 months. 4/. The invitation was doubtless a consequence of the visit of R. W. Hodgson (4) in 1951-1952 and his observation that certain virus diseases were causing considerable loss in Egyptian citrus orchards.

The citrus growing areas were reached by automobile and train, and when it was necessary to remain several days in an area, we were usually accommodated in one of the modern Government Rest Houses. The Egyptians thoughtfully made arrangements for our party to visit many of the ancient temples, tombs, mosques, monasteries, botanical gardens, and many private gardens and estates. We were scheduled to visit the Kharga Dhakla oases in the western desert using the special desert cars of the Frontier Service. However, the pressure of other work prevented our taking advantage of this rare opportunity. An invitation to hunt with falcons in the sinia desert had to be passed up for the same reason.

Geography In Relation To Citriculture

Egypt (Fig. 1) covers 386,000 square miles, twice the area of California, but 96.5 percent is uninhabitable desert. Six million feddans (a feddan equals approximately 1 acre) is cultivated, and on this live 22,000,000 people, or 1600 people per square mile; thus the habitable part of Egypt has one of the densest populations in the world (3). Naturally, most of the land is devoted to staple crops such as grain, beans, vegetables, and cotton. In the United States, there are 210 people per square mile of cultivated land.

Citrus is grown to some extent in all the irrigated districts of Egypt, but orchards are more numerous and production is heavier in certain areas. Approximately 51,000 feddans is devoted to citrus culture (2). After World War II the citrus acreage decreased but is presently increasing, according to the Ministry of Agriculture. Very little citrus is exported and that is offset by imports of citrus and citrus products from other countries.

Heretofore citrus production was mainly in the hands of the larger land owners who were in a position to diversify their farming operations. Under the present law none may own more than 300 feddans and, under the land reform program of the New Regime, large estates are being broken up and distributed among landless people. Land now in citrus will be distributed among college graduates on a cooperative basis to avoid reduction of citrus fruits. Citrus growing is very profitable and the country could consume more fruit than is presently available.

About two-thirds of the citrus is grown in the delta area north of Cairo. This area is known as lower Egypt, a carry over from the days of the Pharaohs when it was a separate country. Approximately a third is grown in scattered locations in upper Egypt, an area that comprises all the irrigated land from Cairo south to the Sudan border. Included in the latter region is the province of Fayoum, a depression area in the desert about 50 miles southwest of Cairo, where the production of balady lemons (acid limes) is especially important (1700 acres). Most of the citrus in Egypt would be encompassed by a circle of 70 miles' radius centered at Cairo. Significant centers of production outside this area are Sids, Assiut, Matanah, and Kom Ombo in upper Egypt and the Gaza strip near Israel.

Commonly Grown Varieties of Citrus

Approximately 63 percent of the total citrus acreage is devoted to sweet, or round, oranges, 23 percent to mandarin oranges, 11 percent to acid limes, 2 percent to sweet limes, and 1 percent to other kinds including acid lemons, grapefruit, etc. (4).

A great many varieties of citrus are cultivated in Egypt, as in Florida. The principal sweet orange varieties in order of the frequency of their occurrence in our survey notes are balady (meaning common or local variety) blood orange, Khalily red, balady orange, Navel Sukkary (Tunisian or Touncy is a strain of Sukkary), Valencia, Khalily white (a strain of Jaffa), Mazizi (also known as Yusef Soliman) and Safargali. The Sukkary orange is almost without acid and would be considered

---

1/ Pathologist, U. S. Department of Agriculture, Agricultural Research Service, Horticultural Crops Research Branch, Orlando, Florida. Study of citrus diseases in Egypt was made under the auspices of the International Cooperation Administration (formerly F. O. A.) Feb. 17 - July 30, 1955.

2/ Pathologist, Plant Pathology Section, Ministry of Agriculture, Orman, Egypt.

3/ Horticulturist, Department of Horticulture, Minister of Agriculture, Giza, Egypt.

4/ Especially helpful in making the necessary arrangements were Dr. Abd el Razzak Sidki, Minister of Agriculture; Dr. Abbas el Sawy, Under-secretary of Agriculture; Dr. Mohamed Baghat, Director General of Horticulture; Mr. Mahmoud Hosny, Director General of Plant Protection; Mr. Abdel G. Sobhi, Director of Extension; Dr. Amin Fikri and Mr. Wahib Dos of the Plant Pathology Section; and many others. The authors are also indebted to Mr. Mohmoud A. el Shiaty of the Horticulture Department and to Mr. Kamel Jacob of the Plant Pathology Section for their cooperation and assistance in the survey work. The U. S. O. Mission in Egypt, headed by Admiral Harold R. Stevens (U. S. N. retired), served as headquarters in Cairo and provided secretarial assistance and local transportation. Dr. M. H. Campbell, formerly in charge of the Agriculture Section, Mr. Russel Kilgore, presently in charge, and others of the mission and embassy staff were all very helpful with the many problems that confront a newcomer working in a foreign country.

rather insipid by American standards. The Mazizi, or Yusef Soliman, has slightly more acid than the Sukkary and would be considered very acceptable by many in this country. The Safargali fruit has fine flavor, but because of the rather sickly and short-lived growth of the trees, this variety is no longer propagated.

Only one variety of mandarin is grown, the balady mandarin, which

Fig. 1. The irrigated areas of Egypt along the Nile river constitute the inhabited portion.

seems very similar to the Spanish mandarin. The fruit is orange-yellow and seems tighter skinned than Dancy tangerine and slightly larger. The quality seemed better than that of the Dancy grown in Florida, but this may be due to differences in rootstock and climate. The balady mandarin is very popular and is more widely grown than any other kind of citrus.

The balady lemon is identical with the small seedy West Indian, or Mexican, lime according to R. W. Hodgson. Trees of this variety are commonly grown as seedlings on their own roots, and consequently there is some variation in the fruits of different trees. In the garden of the Coptic monastery at Dair el Meharrack near Assiut, we saw balady lime fruits of golf ball size and with 3 or 4 seeds. Dair el Meharrack means the burning place and, according to the priests who served us breakfast, Mary and 2-year-old Jesus stayed at this spot for 6 months and 10 days at the time of their flight into Egypt.

Fruit is usually packed in the orchard (Fig. 2) and sold by the piece in nearby towns. On the street in Cairo balady lemons were being sold at 1 to 3 fruits for a piaster (2.87 cents at the current exchange rate). A mature balady lemon tree will produce about 4,000 fruits. At Fayed on the Great Bitter Lake of the Suez Canal, 5-year-old balady lemons were producing L. E. 600 ($1722) per acre and 20 feddans of mixed citrus earned L. E. 5000 or $14,350 in 1954. Therefore there is little interest in the large seedless Tahiti, or Persian, limes, which produces about a tenth as many fruits per trees as the balady lemon.

The small production of sweet lime fruits is used mainly for beverages of the "ade" type, which are very popular. In Cairo there are shops that prepare sweet lime juice, mango juice, sugar cane juice, and many others while you watch. A few sour lemons and grapefruits are grown principally for the use by foreigners in the country. The demand for both kinds is small because Egyptians dislike the bitter taste of grapefruits, and the balady lemon serves all the purposes for which acid lemons are used elsewhere.

Principal Rootstocks

Sour orange is the rootstock most commonly used for citrus, but balady lemon is used to some extent on very light soils. At one location a small planting of 20-year-old sweet oranges was seen on sweet lime, but the trees were stunted severely from the effects of xyloporosis, thus it was evident why this rootstock was not more widely used. Balady lemons are grown as seedlings, mainly because on their own roots they can be made to produce out-of-season fruits by manipulating the water supply, a very profitable practice. On sour orange rootstock, balady lemons do not respond to this type of culture. Sweet limes are commonly propogated from cuttings and grown on their own roots, probably because they often are unhealthy on sour orange rootstock. In the Assiut area, many sweet orange and balady mandarin trees are grown on their own root. The Government propagates most of the citrus trees, and the present price is 4 piasters each for either seedlings or budded trees.

Irrigation Practices In Relation To Disease

When water is cheap, it is used lavishly. This seems to be as true in Egypt as elsewhere. It is not uncommon for Egyptian orchardists to irrigate every 15 to 20 days, and in the areas of heavy soil and poor drainage, the ground may remain saturated from one irrigation to the next. Excessive irrigation is directly responsible for much root damage and provides a favorable environment for certain infectious root diseases. It is an especially serious problem in the delta area because of the high water table. However, citrus orchards on sandy soil at the edge of the desert also suffer from excessive irrigation. Rainfall is scanty — 7.24 inches per year at Alexandria, 1.02 inches at Cairo, and 0.04 inch at Dakhla oasis in upper Egypt (2) — and contributes little to the requirements of agriculture.

Important Diseases, Their Incidence and Importance

A preliminary examination of citrus in the vicinity of Cairo indicated that psorosis is a very important part of the disease picture. Consequently, it was decided to visit upper Egypt

Fig. 2. Packing oranges in the orchard at Serag el Din.

first, in order to take advantage of the earlier appearance of leaf symptoms of psorosis in that region. Later we visited many orchards in the delta area.

As the survey progressed it became apparent that certain diseases were much more important economically than others. Several factors were weighed in judging the relative importance of the diseases listed; these included actual and potential tree damage, frequency of the disease within varieties, and geographical distribution. On this basis, a summary of the observations is presented.

Foot Rot: Almost from the first we were impressed by the large number of trees damaged by foot rot, certainly the most serious citrus disease in Egypt. This is a disease of the roots and lower trunk caused by several species of the fungus **Phytophthora**, of which **P. citrophthora** is the most common. In about a third of the citrus areas visited in upper Egypt, foot rot was the most serious disease and it was even more widespread in lower Egypt.

Foot rot is especially serious in the Fayoum area, where acid lime production is concentrated. In many of the Fayoum lime plantings, half or more of the trees were infected with foot rot, and perhaps a fourth of these were in various stages of decline. Numerous vacant spaces were conspicuous evidence of trees killed by **Phytophthora.** On the other hand, several 30-year-old seedling lime trees that were not irrigated excessively showed no evidence of damage from foot rot.

At Kom Ombo, in upper Egypt, many sweet lime trees are grown on their own roots from cuttings. Incidentally, the name Kom Ombo may be translated as Gold Hill and, in the days of the Pharaohs, this was the starting point of caravans bound for the gold mines near the Red Sea. Here, too, is the temple of Kom Ombo, which we visited for several hours. Fully half of the sweet lime trees examined at Kom Ombo were affected with foot rot, and many were practically girdled. Trees growing on resistant sour orange rootstocks usually were protected from foot rot, but in the delta, low-budded lime and lemon trees were frequently attacked above the sour orange bud union.

Psorosis: The second most important citrus disease was psorosis, of which three forms — psorosis-A, concave gum, and blind pocket — were noted. All three have similar leaf symptoms and can be distinguished from one another only by means of bark symptoms, which may not appear until infected trees are 12 or more years old. Leaf symptoms are transitory, appearing for a few weeks on young leaves and disappearing as the leaves mature. To complicate the situation further, leaf symptoms are not always expressed by psorosis-infected trees.

The citrus disease survey was timed to commence about February 15, when conditions of psorosis would be most favorable for leaf symptoms. By April 28 leaf symptoms had disappeared but, on the basis of observations made prior to April 28, it was possible to make some generalizations concerning the incidence of psorosis in the kinds of citrus commonly grown.

In 8 of the 21 areas visited, psorosis was the most important disease seen. Ninety percent of the balady mandarin trees examined exhibited leaf symptoms, and it is our opinion that this variety is virtually 100 percent infected with psorosis. Infection was usually of the concave gum or blind pocket type, and only occasionally of the bark scaling A-type. Fortunately, there are old seedling trees of balady mandarin that appear to be free of psorosis, and buds from some of these trees were propagated in 1955 for test purposes.

Fig. 4. Xyloporosis pitting of sweet lime on sour orange rootstock.

The situation with regard to psorosis infection in the sweet orange varieties is not much better than in balady mandarin and, on the basis of leaf symptom expression of the trees examined, runs as follows: Khalily whie, 100%; Valencia, 100%; Sukkary, 97%; Navel, 90%; balady blood, 78%; balady orange, 62%; and Khalily red, 50%. These figures are believed to represent a fairly accurate cross section of Egyptian sweet orange varieties. If they are incorrect, they are too low. Less than a third of the infected sweet orange trees exhibited type A psorosis bark symptoms.

Many seedling sweet orange trees are grown in the Assiut area in upper Egypt, and balady orange and Sukkary varieties are most common. Propagations from 50-year-old seedlings of these varieties were started for test purposes.

Xyloporosis: The third most important citrus disease was xyloporosis. Trees susceptible to xyloporosis exhibit pitting of the wood beneath the bark and more or less gum impregnation of the inner bark, but are seldom

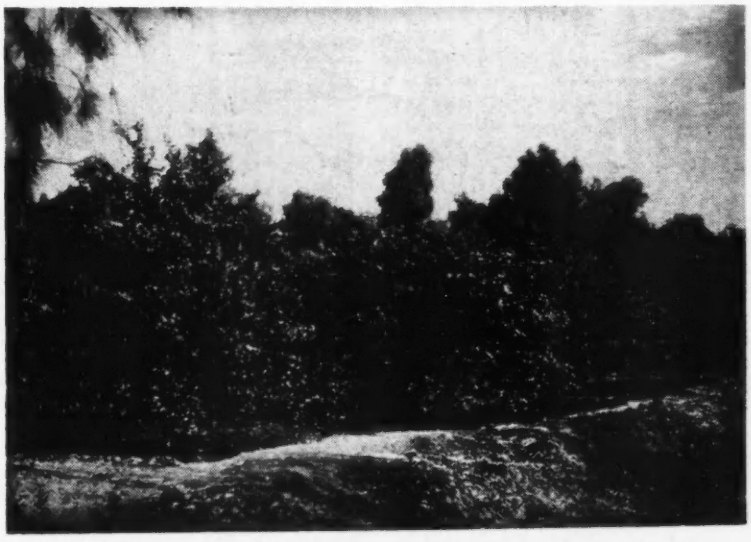


Fig. 3. Balady lemons on well-drained soil at Kom Ombo. The lower trunks and exposed roots are sprayed with Bordeaux mixture for control of foot rot.

killed. Affected trees are much retarded in growth, and productiveness is decreased.

Between 50 and 60 percent of the budded balady mandarin trees examined exhibited symptoms of xyloporosis. Symptoms were not seen on sour orange rootstocks, and none was seen on 50-year-old seedling trees of balady

Fig. 5. Xyloporosis pitting on the sweet lime rootstock of a sweet orange tree.

mandarin near Assiut. Buds from these seedlings and from others examined at Matanah were taken for propagation and testing as sources of xyloporosis-free budwood.

On sweet lime trees, xyloporosis symptoms (Fig. 4) were common, occurring on 50 to 60 percent of the trees examined. This variety is frequently grown from cuttings presumably to avoid a bud union and the girdling effect induced by the concentration of xyloporosis symptoms at that point. A few sweet orange trees on sweet lime rootstock were seen. These were severely stunted as a result of the damaging effect of xyloporosis (Fig. 5) on the sweet lime stock.

Phloem Discoloration of Sweet Orange: For want of a better name, phloem discoloration is used in referring to a disorder of budded sweet orange trees (5) that has some of the characteristics of xyloporosis in mandarin and tangelo trees. Gum impregnation of the phloem tissues is present but not as pronounced (Fig. 6) as in xyloporosis-affected balady mandarins. In Florida sweet orange trees known to be infected with xyloporosis virus have shown no recognizable symptoms. Sweet orange varieties that exhibited phloem discoloration symptoms in Egypt are Sukkary (62% of the trees examined) and in decreasing order of frequency Mediterranean round, Valencia, Khalily white, Safargali, balady orange, balady blood, Sanguinoval, and Navel orange. Symptoms were not seen in Jaffa or Hamlin orange trees.

Affected trees, especially Valencia, were noticeably to severely stunted. At Shalakan in the delta, 13-year-old Valencia trees with phloem discoloration and slight xylem roughness were examined that were no larger than normal 4-year-old trees. Some of the stunting may have been the result of water damage.

Tristeza: Every effort was made to discover whether tristeza is present in Egypt. Balady lemon (West Indian lime), a good test plant for tristeza, is widely grown in Egypt, both commercially and as dooryard trees. Although balady lemon trees were examined at every opportunity, no leaf symptoms of tristeza or wood pitting was found. Symptoms suggesting tristeza were seen on 2 balady orange trees on sour orange rootstock at Tel el Khebir, a town located on the Ismailia Canal between the delta and the Suez Canal but, in spite of repeated tests on West Indian lime plants reared from seed sent by J. M. Wallace, tristeza was not discovered from either of the trees.

Safargali Disorder: The Safargali, considered a degenerate variety of sweet orange, is characterized by thin foliage, small, stiff, crinkled leaves, and low production of small fruit in which creasing of the rind is common. Some Safargali trees are rather flat-topped and of bushy habit of growth. Because of these undesirable characteristics, the Egyptian Government has banned further propagation of this variety. The possibility exists that Safargali trees may be diseased specimens of other varieties, because they frequently occur scattered among other varieties of sweet orange, principally balady orange, Mazizi and Khalily red, but solid Safargali plantings several acres in extent were occasionally found. Safargali trees were seen rather frequently in the delta area, but were noticed at only one location in upper Egypt. Certain characteristics of Safargali trees suggest stubborn disease, a disorder that appears to be widespread in Morocco, French Guinea, and Syria (1).

Less Important Diseases

Several citrus diseases of minor importance to Egyptian citrus production, but important in relation to citrus diseases in other parts of the world or because they have not been reported heretofore, were observed.

Rio Grande Gummosis: The disease known variously as gummosis, Florida gummosis, and more recently as Rio Grande gummosis, was observed a number of times in Egypt, where it typically causes a rather copious flow of gum from pockets under the bark or in the wood. Gumming lesions may occur on the branches or trunk at considerable distance from the ground. Usually more or less bark scaling is associated with the exudation of the gum, and consequently the disease is often confused with psorosis and sometimes with foot rot.

Rio Grande gummosis was seen rather frequently on trees suffering from water damage in the delta area and under the same conditions near Assiut. This relation to water damage has also been noted in Texas. The unusual thing about this disease is that it was encountered most frequently on sweet orange trees (Navel, Khalily white and balady orange), occasionally on balady lemon trees and, in a few instances, on grapefruit trees which are not common. In

Fig. 6. Valencia orange with bark shaved to show phloem discoloration associated with sweet orange Xyloporosis. Mild pitting of the scion wood does not show in the photograph.

Florida and Texas, this type of gummosis is common on grapefruit trees and very rare on sweet orange trees.

Rusty Bark Sloughing: A peculiar bark condition was noticed on sweet lime and on acid lemon trees at both Kom Ombo and Matanah in upper Egypt. In this disorder the bark sloughs off in minute reddish scales

from a small area an inch or two wide by several inches long (Fig. 7). Within the affected area the bark is thicker than normal. Some aspects of this scaling suggest leprosis. The cambium of the affected area seems to be damaged in that new wood is

Fig. 7. Rusty bark sloughing of sweet lime trees grown from cuttings.

not formed, the bark sloughs away and the spot is gradually overgrown by the adjacent healthy tissue forming a deeply indented pit or groove. The disorder appears to be of little importance in fruit production, but under more humid conditions the lesions would be susceptible to secondary invasion by **Diplodia natalensis** and **Ganoderma** sp.

A peculiar bark condition was noted on a number of balady mandarins in the Mahmoud Mohamed orchard near Assiut that could be rusty bark sloughing on this variety. The bark had fallen away in hand-sized patches (Fig. 8) exposing the wood, which was pitted. The pitting could be caused by xyloporosis, which is common in balady mandarin, but the bark deterioration was unlike anything seen elsewhere. Bark affected with what appeared to be an early stage of the disorder was cut out, revealing a thumb-size shallow indentation in the wood.

Bark Furrowing: A bark abnormality resembling enormously enlarged growth cracks was noted on several varieties of citrus, but principally on lime and lemon trees. The outer layer of bark is split apart an inch or more and for a distance of 6 to 8 inches leaving a thin (about 1 mm.) inner layer of bark intact. The cambial face of the wood and of the bark of the furrowed area is green, presumably from chlorophyl formation. Trees with bark furrowing appeared normal in other respects.

Prominent Vein. Extraordinarily prominent lateral veins were first noted on the leaves of sweet lime trees at Kom Ombo (Fig. 9), but subsequently were found to be rather general on most citrus varieties including sweet orange seedlings. Prominent vein was not observed on balady mandarin leaves. In this abnormality, one or more lateral veins appears to be much enlarged or prominent. There is no preceptible change in the color of the prominent veins by reflected or transmitted light, and the trees appear normal in other respects.

Yellow Pin Point Spotting: At several locations in the delta and in the Fayoum area, numerous small yellow spots 1 to 2 mm. in diameter were observed on the upper surface of citrus leaves. On the underside of the leaf and beneath each yellow spot, there was a small whitish, sometimes brownish, blister of about the same diameter. Yellow pin point spotting was observed several times on balady lemon and once on Navel orange. Previously these symptoms

Fig. 8. Balady mandarin with bark sloughing away in patches exposing pitted wood surfaces; cause uncertain.

had been observed on grapefruit, Orlando tangelo, and sweet orange leaves in Florida and California, and also on sweet orange and sour orange leaves in Morocco. Similar symptoms have been described for boron toxicity, but according to Paul F. Smith and H. D. Chapman, who have seen kodachromes of the disorder, the spotting described is not from that cause.

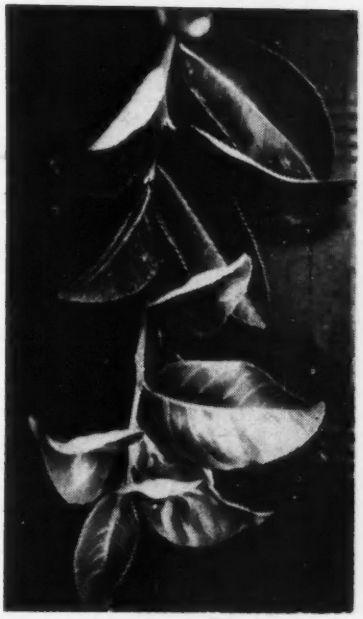


Fig. 9. Sweet lime leaves with occasional veins unusually prominent; cause unknown.

Summary

Egypt has a highly profitable citrus industry of some 51,000 acres based primarily on the production of sweet oranges, a single mandarin variety, and limes of the West Indian type. An unusually wide assortment of citrus varieties is grown commercially. Production is seriously hampered by root damage from excessive irrigation augmented by a number of virus diseases. Foot rot, caused by **Phytophthora spp.**, is the disease responsible for the greatest loss and until irrigation methods are changed it will doubtless continue to be of primary importance.

Psorosis is unusually widespread in certain citrus varieties in Egypt, and in the balady mandarin and several varieties of sweet orange (Khalily white, Valencia, and Sukkary), infection approximates 100%. No commercially important variety of sweet orange appeared to be less than 50% infected. However, seedling trees of several varieties are available as sources of psorosis-free budwood. Xyloporosis is widespread in the balady variety (symptoms on 50 to 60 percent of all trees examined) and frequently causes stunting of the

(Continued on Page 16)

Indian River Citrus League To Meet In Ft. Pierce, Oct. 10-11

Wednesday, October 10, 1956

Walter Dun, Presiding

9:30 — Invocation, Dr. Albert Morris.

Welcome — Raymond Padgett, Mayor, Ft. Pierce, Fla.

9:45 — Response, Alex Rayburn, Pres. Indian River Citrus League.

10:00 — Introduction of the Senator, Hon. Spessard Holland, John McCarty, Grower, Ft. Pierce.

10:10 — Address, Hon Spessard L. Holland, Florida Senior Senator, Bartow.

Recess — 11:00 A. M.

11:15 — Brown Rot: It's Recent Occurrence and Its Control in the Indian River Area, Dr. L. C. Knorr, Citrus Experiment Station.

11:45 — Fruit Blemishes Caused By Spraying, W. L. Thompson, Citrus Experiment Station.

Noon—12:00—LUNCH

1:30 — Reconvene — Art Karst, Presiding.

1:40 - 2:15 — Slide Program On Identification of Mediterranean Fruit Fly, Jim Brogden, Entomologist, Ag. Extension Service.

2:15 — Mediterranean Fruit Fly Program, Ed L. Ayers, State Plant Commissioner.

2:45 — Eradication Plans, Dr. L. F. Steiner, USDA, Lake Alfred.

3:30 — Use of Citrus Cost Data by the Citrus Grower, Bob Norris, County Agent, Lake County.

Panel Discussion Led by Bob Norris:—

Panel Members: Jake Brooks
Bob Edsell
Zach Savage
Jack S. Stinson
Bernard Parrish

After adjournment at the Shamrock, Chan Delaplane will be host at Open House at their new concentrate plant ¼ mile west of State Farmer's Market and 4 miles south of Fort Pierce.

Thursday, October 11, 1956

9:00 — J. J. Parrish, Presiding.

9:15 — Florida Agriculture and the Extension Service, Dr. Marshall Watkins, Director, Agricultural Extension Service.

9:45 — Progress in the Sale of Fresh Chilled Citrus Juices, Walter J. Page, Director of Public Relations, Golden Gift Inc., DeLand.

10:15 — Why Young Trees Die When Setting New Groves, Dr. Gordon Grimm, USDA, Orlando.

Recess — 10 Minutes

10:50 — A Progress Report on Chelates for Calcareous Soils, Dr. C. D. Leonard and Dr. Ivan Stewart, Citrus Experiment Station.

11:15 — Discussion of Experimental Plots to be inspected in Afternoon at Indian River Field Laboratory, Dr. J. R. King, Indian River Field Lab., Dr. Herman Reitz, Citrus Experiment Station.

11:40 — Citrus Rootstock Trials in the Indian River Area. Eight Years Old, Planted in 1948. Dr. F. E. Gardner, USDA, Orlando.

Noon—Lunch

Afternoon Session at (1) Indian River Field Laboratory (2) Rootstock Plots, Norman Pitts Grove.

1:30 — Indian Riven Field Laboratory, Kings Highway, Field Trip:—

Scale Control Plots, Dr. J. R. King, Indian River Field Lab.

Fertilizer Plots, Dr. H. J. Reitz, Citrus Experiment Station.

3:30 — Visit Rootstock Trials — Norman Platts Grove, Dr. F. E. Gardner, USDA, Orlando.

Program will be changed to a clinic session if rains interfere.

Adjourn

After Adjournament — On Wednesday — Open House at New Treesweet Concentrating Plant, West of State Farmer's Market.

OBSERVATIONS ON EGYPTIAN CITRUS DISEASES

(Continued from Page 15)

trees. It is also widespread in budded sweet limes and causes the same symptoms on trees budded on this variety as a rootstock. Phloem discoloration, a symptom associated with xyloporosis, was noted on sweet oranges, although sweet orange varieties have heretofore been considered symptomless carriers of xyloporosis. Phloem discoloration was found most often on sweet oranges of the Sukkary variety (62% of trees examined) and to a less extent on Valencia, Khalily white, and others. The Sufargali orange is considered to be a degenerate variety and the Government has banned it, but the possibility exists that the poor condition of the Safargali trees is the result of a virus disease.

Rio Grande gummosis is economically unimportant, but is of interest because of its occurrence on sweet orange trees, which is not in keeping with observations on this disease in the United States. Yellow pin point spotting was noticed on leaves of acid lime and Navel orange. It has been observed in other countries, but the cause is unknown. Rusty bark sloughing and prominent vein appear to be disorders of citrus trees not previously reported.

Literature Cited

1. Chapot, Henri. June 1956. (Horticulturist, I. F. A. C., Rabat, Morocco). Personal communication concerning his visit to Lebanon, Syria, and Turkey.

2. El-Tomi, Ahmed Labib. 1953. Sub-tropical fruit industry in Egypt. Proc. Fla. Sta. Hort. Soc. 66: 195-198.

3. Gunther, John. 1953. Inside Africa, 1st ed. p. 952. Harper & Bros., New York, N. Y.

4. Hodgson, R. W. 1954. Citriculture in Egypt described by U. C. L. A. scientist. Citrus Leaves 34(2): 6-8, 14, 31-33.

5. Nour-Eldin, Farid. 1956. Phloem discoloration of sweet orange. Phytopathology 40: 238-239.

Florida Southern College Has Citrus Study Course

The Citrus Department of Florida Southern College will again present an evening course in CITRUS CANNING PROCEDURE during the 1956 Fall semester. By special arrangement the course will be taught by Alvin H. Rouse of the Citrus Experiment Station at Lake Alfred.

The course will consist of a three hour class one evening a week, October through January. The first class will meet Tuesday evening, Oct. 2, 6:30-9:30 in Room 107 Citrus Building on the Florida Southern College campus. The course will carry three semester hours credit. Those who do not particularly care to receive college credit for the course may make arrangements to audit the series of lectures.

This course will be of considerable interest to certain persons in the citrus fruit processing industry and should be called to the attention of employees.

OUTLINE OF COURSE:

A. Introduction into the art of canning.
   1. Historical and economic aspects of canning
   2. Principles involved in canning procedure.

B. Operation of commercial canning procedure.
   1. Factory site
   2. Factory design
   3. Basic canning procedure
   4. Plant sanitation

C. Citrus processing — operation and methods.
   1. Single strength juices
   2. Hot pack concentrates
   3. Frozen concentrates; 38°--42° Brix and other high Brix products
   4. Citrus sections

D. Quality control and laboratory examination.
   1. Objectives of quality control department
   2. Methods of quality control on raw products, products during processing and finisher products
   3. Chemical and organoleptic examinations
   4. Microbiological examination
   5. Government standards and regulations

E. Storage and spoilage of canned foods

F. Citrus by-products
   1. Stock feeds, molasses, peel oil, seed oil, pectin, alcohol, glycosides, marmalades, and jellies

G. Nutritional value of citrus products
   1. Composition and vitamin content

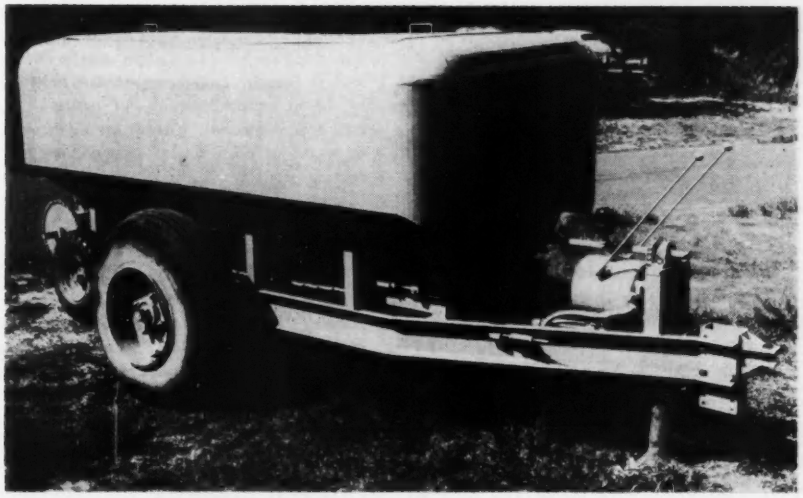
H. Field trip through a concentrate plant.

It is estimated that there are mpre than 10,000 species of destructive insects in the United States. As a group, insects are man's chief competitor for the food, feed, and fiber that we produce.

MANGO USES SHOWN AT FLORIDA MANGO FORUM

Mango-in-the-half-shell, pie, bread, salad or mangos the way you like them were exhibited at the Florida Mango Forum held in Miami recently, according to Dade County Demonstration Agent Olga M. Kent. County 4-H girls manned the exhibit and the mango variety tasting tables. The girls also demonstrated methods of freezing mangos, Miss Kent said.

Te keep fresh milk at its best keep it clean.



BAUGHMAN

TRACTOR PULL-TYPE (HYDRAULIC)

SPREADER

1. **Capacity 3 tons.**
2. **Twin Conveyor Chains with separate gates.**
3. **Twin Ground Wheel Metering.**
4. **Large Distributor—with two speeds.**
5. **Hydraulic Control when spreading to either side.**
6. **Adjustable tractor hitch.**

PRICE AS LOW AS $1175.00, F.O.B. LAKELAND
Also truck-mounted units four to 10 tons, as low as $975.00 mounted

Baughman Manufacturing Co., Inc.
2222 Auburndale Road, Phone MUtual 7-9063
LAKELAND, FLORIDA

Florida Water Resources Study Commission ... Its Aims And Resources

. . . By . . .
BYRON E. HERLONG, CHAIRMAN
AT CITRUS INSTITUTE,
CAMP McQUARRIE

Statistics concerning the expected growth of Florida have been quoted with such frequency recently that they do not need repeating here. It is sufficient to say that the anticipated increase in population, business, agriculture, and industry is such that very serious problems will arise pertaining to the beneficial use of water unless there is careful planning now. Other states, such as California are faced with the expenditure of many millions of dollars because of lack of planning years ago.

In order to properly plan and to obtain the maximum net benefits of our water there is pressing need for a greater understanding of the states water resources and of the effects of Man's development and use of water.

Many conflicts stem from the growing competition for the use of water, but limited viewpoints and partial knowledge are doubtless contributing factors in most disputes concerning water.

The state therefore can and should have a vital role in the overall program of water development within its boundaries. Flexibility is desirable in all phases of the planning, to permit water developments and use in accordance with economic need, and without restriction, except in the interest of the general welfare. It cannot be too strongly emphasized that planning must mean intelligent flexibility, not rigidity, cooperation and shared responsibility, not dictatorship and centralization. The American system succeeds only as it encourages initiative, enterprise, and the sense of responsibility for the common good. No plan can be acceptable which weakens or fails to use these qualities.

Among the problems which have arisen in our state with reference to water, are droughts and floods due to variations in seasonal and annual rainfall, lowering of ground water levels in the areas of heavy withdrawals, flooding from the obstruction of natural flow of difused surface water because the development of other lands and building roads, salt water encroachment and pollution.

The problem of pollution of lakes and streams by discharge of sewerage and industrial affuant is becoming increasingly serious every day and in many instances public health is being endangered. In some instances, however, there is a difference of opinion as to the cause, effect, and danger.

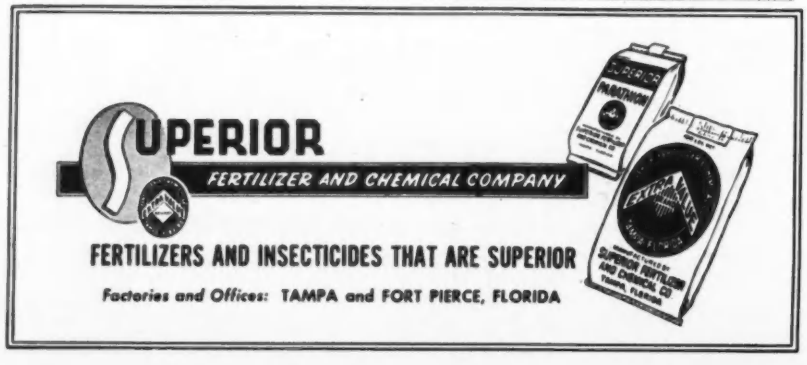
The amount of water supplied to Florida from all sources, including underground surface and rainfall, appears to be sufficient for all the needs of man in Florida for the foreseable future PROVIDED it is PROPERLY MANAGED and UTILIZED. The desirability for such measurement seems to extend to the regulation of any activity which would result in the lowering of the naturel mean water level in a given area.

In such management, it is important to protect and preserve the water supply necessary to encourage the growth of industry, large and small, and to encourage new industry to become established in Florida by assuring industry that it would have an adequate supply of water to meet it's needs. Sports, fishing, and hunting are also valuable assets in Florida and consideration should always be given to such activities in planning the solution to water management problems.

Since we speak of management we must of necessity mean some law, or rule whereby this would be accomplished. The diversity of topography and geology of the State of Florida is such that it would be virtually impossible to write a practical comprehensive water law detailing the rights and responsibilities with reference to the water without the same being administered by board, commission, or agency. The wisdom of setting up such a board with effective and equitable regulation is dependent upon an adequate knowledge of our water resources and an exhaustive study of the water management affected interests.

Most water users do not have a general interest in water resources, but only a special interest in specific sources of water or in certain aspects of the water resources. Characteristically water users are special pleaders for a particular type of use, or for a particular geographic region or river basin or part of a basis, or a particular method of water development.

The need for basic data becomes more imperative with increasing developments and use of water as the various uses of water become more competitive. When a large proportion of the available supply is used, a far greater amount of basic data is required, in order to know the water situation precisely. Such conditions require accurate information as to the available supply and more precise calculations of how much can be elloted to the various users in attempting to obtain maximum benefits. On the other hand, when only a small proportion of the available supplies are being used, rather large areas can be


SUPERIOR
FERTILIZER AND CHEMICAL COMPANY
FERTILIZERS AND INSECTICIDES THAT ARE SUPERIOR
Factories and Offices: TAMPA and FORT PIERCE, FLORIDA

condoned concerning the estimated amount available and used.

In 1954 when Senator Leroy Collins was elected to fill the unexpired term of the late Gov. Dan McCarty he appointed a citizens committee to make a survey and investigation of the water problems of the state and to make recommendations to him following the committee's findings. The citizens' committee held several meetings throughout the state and held a public hearing in Orlando in Dec. 1954. This meeting was well attended by interested persons from all parts of the state and they represented industry, agriculture, municipalities, business and domestic users of water. From the conclusions drawn from the public hearing and other studies of the committee a recommendation was made to Governor Collins.

Governor Collins then following the recommendation of the Citizens Committee secured passage of Senate Bill No. 377, declaring the water policy of the state and authorizing the establishing of a water resources study commission to conduct a study and report its findings and recommendations to the regular session of the Legislature. The members of the commission were appointed as follows: Two from the Senate, Senator Doyle Carlton of Wauchula, Senator H. B. Douglas of Bonifay, Representatives Harry Westberry of Jacksonville and Roy Surles of Lakeland, and three citizens appointed by Governor Collins are James A. Ball of Belle Glade, Vice-chairman, B. W. Helvenston, Jr., Live Oak, and myself as chairman.

Assitance to watered areas is becoming essential to assure a continued adequate supply of water to those areas. The storage of waters or the impounding of water is going to be essential in certain areas of Florida.

Progress in solving the pollution problem is being made but will have to be stepped up to prevent the loss of this supply of water by its being polluted.

The increasing demand for water in Florida will increase the problems — if I put down a well to irrigate my property and a neighbor puts down a deeper well and he pumps at a more rapid rate, he could completely cut off or destrop my water supply for all pratical purposes and I could do nothing about it.

The great fluctuation in the height of the water table and the levels in our lakes must be solved to insure a more uniform level of the water table for its dependable economic use.

More data must be secured about our ground water and our surface water.

In making an analysis of any problem it is necessary to define the problem or problems invovled. Consequently, one of the first objectives of the Commission is to obtain a record of the types of water problems in Florida that have or may have legal, administrative or economic implications. Further it is desirable to record as many problems as possible that have developed in the state so that the magnitude of the respective problems may be ascertained.

The proper way of obtaining a record of such problems is to approach the individuals or groups who are experiencing such problems. For this reason a committee has been organized in each of the 67 counties for the express purpose of listing for each county as many problems as possible.

We are fairly familiar with the type or categories of the problems that may be experienced in Florida. These types have been outlined and given to the County Committees so that the reporting will be uniform.

The research project of our Committee on Water Law is also being conducted around this outline of problems, so that for each type of problem we will have information on the present legal status of each type of category.

It is planned that a comparison of the existing problems with the existing law will furnish the Commission with the information necessary to answer the Legislative instructions, to-wit: "The Commission is directed to determine whether or not there is need for a comprehensive water law in the state administered by a Board . . . . "

In order to obtain a comprehensive picture of the state's water resources, several statewide fact-finding committees have been organized. These are committees on Climatology and Meterology, Water Use, Water Quality, Surface Water, Ground Water, Land Use, and Water Pollution. It is planned to integrate the reports of these various committees into a single comprehensive report on the present water resources picture and on the anticipated future picture. This information should enable the Commission to comply with the remaining Legislative instruction, which are to determine "the extent of the jurisdiction of the board, the details of the operation thereof, the expense of operating the board as compared to

(Continued on page 22)

EMJEO

(80/82% MAGNESIUM SULPHATE)

Many years a favorite source of soluble magnesia for Florida soils. Used extensively in fertilizer mixtures for citrus crops and vegetables. Especially useful and economical for direct applications where only magnesia is required.

Florida growers now consider magnesium a primary plant food in the same category with nitrogen, phosphorous and potash.

The recommendations of the Florida Citrus Experiment Station at Lake Alfred, published in January 1954, stress the need for large application of magnesium for Citrus in soluble form and state that it is usually applied as a Sulphate.

Ask you fertilizer manufacturer for EMJEO, long a dependable source of this key plant food.

BERKSHIRE CHEMICALS, INC.

420 Lexington Avenue New York 17, N. Y.

. Magnesium .
. For a Full Harvest .

ADVERTISEMENT — LYONS FERTILIZER COMPANY

The LYONIZER

COMPILED BY THE LYONS FERTILIZER COMPANY

Reports Of Our Field Men . . .

SOUTH POLK, HIGHLANDS, SARASOTA, DeSOTO AND HARDEE COUNTIES

C. R. Wingfield

Rains during the latter part of August and in September have been gratifying. The citrus trees have responded wonderfully well and the growth is the best we have had for some time. The stimulation has also caused the fruit to size some although the grapefruit continues to be small. There is talk that some grapefruit will move into the markets the last of September.

The crop of oranges are beginning to look much better since the tree condition has improved. Early and mid-season fruit still appears to be at least normal, but I am still of the opinion Valencias will be short unless the young trees, which have a very good crop, brings up the average. All of the non-bearing trees have had their last feeding until Spring and have put on a very good growth. The cover crops are being worked down and it will not be long before our attention will be turned to the Fall fertilizer program.

Vegetable growers have been busy with their plantings and the crops during early September were damaged from heavy rains. We had rains on the 17th and 18th that possibly did not help matters. Lakes and rivers have begun to rise some and we hope they will continue.

WEST HILLSBOROUGH AND PINELLAS COUNTIES

J. A. Hoffman

The next few weeks growers will be turning in cover crops and preparing for the Fall application of fertilizer. The Fall application will start about the middle of October. Most groves in this section have a good orange crop and a heavy application will be applied for the coming crop. A Fall growth is starting to show up in most groves at this time, Sept. 18.

Fruit is starting to break in color, but it will probably be a month or so before the first shipment in Pinellas. Buyers are quite active in the field. Growers seem to be pleased with the outlook at this time.

SOUTH HILLSBOROUGH AND MANATEE COUNTIES

J. D. Toll

By the time you read this we will be in the middle of the Fall application of fertilizer on citrus. However, young trees should have had their last application of fertilizer by October 1st and should not be fertilized again until Spring.

Generally, growers are very satisfied with the outlook of good prices for citrus this season.

Tomato growers in the Ruskin area started setting the second week in September.

The anticipated strawberry crop in the Plant City area is less this year because of the ending of the Summer school which has created a harvesting problem.

HIGHLANDS AND POLK COUNTIES

J. K. Enzor, Jr., & R. E. Lassiter, Jr.

Young trees should be receiving their last fertilizer application for the year at this time. This application should be completed by early October before the time of banking. The regular Fall fertilizer application will probably start around the first week in October.

Rust mite activity has declined some but is still very high especially on the fruit. It is expected that the activity will remain high throughout September. Some growers have delayed rust mite sprays because of the damage of rain reducing the control.

If rain is a factor, lime-sulfur can be used to good advantage since it is not readily washed off. Lime-sulfur should not be used on Temples, tangerines and early oranges. During the next few weeks it would be well to make an examination of all groves for rust mite, purple scale and purple mites. Even though only a few mites might be found it would be well to keep a close check so that the grove may be treated before a heavy infestation develops later in the Fall.

We have had good rains in this section of the state for the last few weeks which has helped considerably those groves which suffered from the lack of water during the early Spring and early Summer. Some growers have been using an application of nitrogen in those groves where foliage is lacking and fruit sizes are small due to the dry weather which we experienced.

EAST HILLSBOROUGH AND PASCO COUNTIES

E. A. McCartney

Our monthly report for the September issue was not forwarded because of vacation.

We spent ten days at Hot Springs where we took the baths. This was our first visit there and we enjoyed it very much. However, we were glad to get back home and start checking groves for the Fall application of fertilizer.

Groves are looking good and a good crop of fruit is set but sizes are somewhat small due to lack of rain and late bloom. Some packing house quality of early fruit has been sold, as early as August, at prices ranging from $1.25 to $1.40, on the trees.

An early Fall application of fertilizer is recommended to help size up the late bloom fruit. Most of the groves have been sprayed and the fruit is clean but a check on rust mite is advisable and trees dusted before damage occurs, if shipping quality is desired.

The groves are being chopped or disced and the Fall application of fertilizer will soon be starting.

NORTH CENTRAL FLORIDA

V. E. Bourland

We are having nice Fall weather, we haven't had much rain, and it doesn't look like we are going to get much through the equinox. All the lakes are way below normal, flats and all shallow lakes are flats and all shallow lakes are dry, some that I've never seen dry.

Most of the groves look good considering the dry weather, most all varieties of fruit seem to be smaller than past years at this date. Scale has been bad, and is plentiful in most groves in spite of growers' efforts to control it, growers should be continually checking for red spider as I have found some damage at this time. Cover crops have been very good, and are being chopped in groves.

Young trees have made a good growth, but the caretakers have had to be on their job to keep trees from suffering from the drought.

ADVERTISEMENT — LYONS FERTILIZER COMPANY

Uncle Bill Says:

They's days when we jist figger the whole darned world has gone sour . . . seems like folks we thot was our friends sort of give us the cold shoulder, 'er that our business which we'd always thot was pertty good jist didn't make no sense . . . or maybe the baseball or football team we jist knew couldn't be beat was takin' a lickin' day after day, and sometimes it seems that our wife was entirely too sharp in seein' our faults and in mentionin' 'em . . . and when this sort of atmosphere does cloud up all around us we've always found that it paid to check up on our liver, or to maybe take a does of mental cator oil to help make us think straight.

On thing is is fer dang sure nobody ever reaped any profit feelin' sorry fer himself . . . this sort of sentiment jist ain't no good fer nothin' . . . a guy that's got any real problems will be heaps better off concentratin' on the job of overcomin' his problems by the exercise of aggressive ingenuity and application to the job at hand, than he will by mopin' and moanin' over how poorly the world is treatin' him.

We once knew a guy who was havin' so many business troubles that even the friendly banker who'd loaned him some money suggested that maybe he'd be better off goin' into bankruptcy . . . but the guy thumbed his nose at the banker and his troubles and he really come out on top in a big way . . . chiefly 'cause he wouldn't waste time feelin' sorry fer himself or admittin' he was licked.

And all over Florida they is men who has seen the citrus and vegetable producin' business at times when it looked like they just wasn't any hope . . . but who have worked and scrapped and studied and have kept everlasingly at their jobs until today they are in the best shape they ever been in.

'Course one of the very most important things to do in producin' Florida crops is to use the right sort of fertilizer . . . and every year more growers is findin' that Lyons Fertilizers Produce Maximum Crops of Finest Quality.

CITRUS INSECT CONTROL FOR OCTOBER, 1956...

(Continued from page 3)

but is not recommended for general use unless temperatures are lower than 88°. However, DN Dry Mix may be used where the crop has been picked or where there is no crop as on younger trees. DN Dry Mix should not be used in alkaline solutions such as those containing lime-sulfur. A second miticide is aramite 45W used at 2/3 pound per 100 gallons or aramite 15W at 2 pounds. Aramite is safe to use at any time, but cannot be used in alkaline solution. A third effective miticide is ovotran at 1 pound per 100 gallons. Ovotran is not effective against the older stages of purple mite, but kills the younger stages and either kills eggs or lasts long enough to kill the young mites as they hatch. This, of course, means that ovotran is slow to bring mites under control. To give a quick kill, 1/4 pint of 40% TEEP or 1/2 pound of 15% parathion should be used with the ovotran. Since mites become resistant to ovotran if used in the same grove more than once a year, it is best to delay its use until mid-winter when mite eggs are likely to be more numerous.

A fourth and newer miticide is Systox. The active ingredient of Systox is about as poisonous to warm blooded animals as parathion and more readily absorbed through the skin. It should, therefore, be handled with caution. Systox is an effective miticide at 1/2 to 1 pint per 100 gallons. Lower dosages may give an excellent initial kill, but are not likely to give a long period of control.

Oil emulsion at 0.7% actual oil is an excellent miticide, but may retard degreening and reduce solids if applied at this time of the year. Its use should be confined to non-bearing trees.

Rust Mite Control: The best spray for rust mite control is 1 gallon of lime-sulfur plus 5 pounds of wettable sulfur per 100 gallons of spray. Although lime-sulfur can be used with ovotran and in parathion sprays, it cannot be used with aramite, DN Dry Mix No. 1 or Systox. For this reason and because lime-sulfur often helps to develop purple mite populations, it is preferable to use wettable sulfur at this time of the year for rust mite control. Use 5 pounds of wettable sulfur per 100 gallons in parathion sprays, 8 pounds in miticide sprays and 10 pounds if only wettable sulfur is used.

Plant bugs may infest early varieties of oranges and tangerines in groves that are adjacent to old watermelon fields, where citron melons are growing in the grove and where leguminous cover crops are planted. They can be controlled by dusting the trees with a 10% toxaphene dust at 50-60 pounds per acre. For spraying, use toxaphene (25%) at 16 to 25 pounds per acre or parathion (15%) at 3 pounds per acre.

For more detailed information refer to the 1956 "Better Fruit Program" or consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.

COLLIER & YOUNG
Grove Caretakers, Inc.
Lake Wales, Florida
All Types of
GROVE CARE
Including
Complete
Management
Telephone
Lake Wales 2-0941

More Than 700,000 Acres Sprayed In Fruit Fly Fight

The State Plant Board reports that more than 709,000 acres have been sprayed in the fight for eradication of the Medfly, at a cost of nearly $7,000,000. About 250,000 acres are still being treated and will be sprayed an average of five times more.

New contracts have been approved for additional spraying in the West Coast counties of Sarasota, Manatee and Pinellas, at present the most heavily infested counties in the State. In these counties the sprayings are made once a week, instead of every ten days as formerly. Parts of these three counties have already been sprayed nine times, since the infestations there have been extremely heavy, and some areas there may be sprayed five times more.

Spraying is still going on in some sections of the Miami and Homestead areas. Four of the 27 counties known to have been infested are no longer being sprayed. These are: Lake, which had two infestations; Okeechobee, one infestation; Glade, one infestation; Indian River, three infestations.

Upwards of 1600 infestations have been found in the State this summer.

FLORIDA WATER RESOURCES STUDY COMMISSION — ITS AIMS AND RESOURCES

(Continued from page 19)

the savings anticipated to be effected and the benefits to be received, the relationship of the board to other state agencies and the effect on the various interests involved."

Shortly after all of the Committees have completed their studies and forwarded them to the commission their findings will be assembled, sorted, condensed and presented to the people of Florida for their comments through a series of public hearings. Following these hearings the Commission will prepare its report which will be published and presented to the 1957 session of the Legislature for its acceptance.

I sincerely believe that this study will ultimately disclose that a comprehensive water law for Florida administered by a permanent state board is needed.

I cannot emphasize too strongly the great need for a water management law and that the development, progress, and wealth of this great state will depend to a great extent on the future management of our water resources.

Classified Ads

SUPERIOR CITRUS TREES — We are now booking orders for Summer and Fall 1957 planting. Some varieties available now. Write for quotations and your free copy of "Care of Young Citrus Trees."
WARD'S NURSERY
Box 846 Avon Park, Florida

FOR SALE — HAIRY INDIGO. Early $36.00 cwt. Common $35.00 cwt. Free Delivery on 500 lbs. or more.
LEWIS & VICKERS SEED CO.
P. O. Box 1117 — Phone 3828
Haines City, Florida

FOR SALE — Cleo Sour and Sweet Seedlings. State inspected. $35.00 per thousand. Will bud any variety to Sour Root, Lemon Root, or Cleo Root for future orders, on 2-year root. Deposit required. Phone 6136 White before seven A. M., or write J. R. HALL, GEN. DEL., LEESBURG, FLA.

CITRUS TREES — Limited quantity of leading varieties. Several Hundred Thousand rough lemon seedlings. Place your order with us. Southern Groves—Thornhill Nurseries, Winter Haven, Florida, P. O. Box 1436, OR George M. Thornhill, Dundee, Florida, P. O. Box 411.

HIGHER ORANGE BUT REDUCED GRAPEFRUIT HARVESTS FORECAST

Except for grapefruit, it looks like Florida citrus growers will probably top last year's production during the coming season. The size of the crop naturally will depend upon how kind the weatherman is and growing conditions in general.

The outlook report issued by the University of Florida Agricultural Extension Service recounts that "Florida citrus groves are generally in good condition and the new crop is progressing satisfactorily."

Dr. B. W. Kelly of the Agricultural Marketing Service was chairman of the committee which drew up the citrus report. Assisting were Dr. H. G. Hamilton, head of the Department of Agricultural Economics at the University, and Fred P. Lawrence, citriculturist with the Agricultural Extension Service.

How will the invasion of the fruit fly affect the picture? The panel of experts feels that the well publicized insect will not "appreciably" reduce producti n. "Fruit loss from the pest should be negligible if the eradication campaign is effective," they say.

"Slightly below' 'production of 1955-56 is the way the committee describes grapefruit prospects.

There'll be plenty of customers for citrus fruit, explains the experts, because of the rising income of customers.

STATE OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, OF THE CITRUS INDUSTRY, PUBLISHED MONTHLY AT BARTOW, FLORIDA, FOR OCTOBER, 1956.

STATE OF FLORIDA,
COUNTY OF POLK.

Before me, a notary public in and for the State and County aforesaid, personally appeared S. L. Frisbie, who having been duly sworn according to law, deposes and says that he is the Editor of The Citrus Industry and that the following is to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March, 1922, embodied in Section 537, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher — Associated Publications Corp., Bartow, Fla.

Editor — S. L. Frisbie, Bartow, Fla.

Business Manager — S. Lloyd Frisbie, Bartow, Florida.

2. That the owners are:

Associated Publications Corporation, Bartow, Florida.
S. L. Frisbie, Bartow, Fla .
S. Lloyd Frisbie, Bartow, Fla.
Loyal Frisbie, Bartow, Fla.
Richard R. Frisbie, Bartow, Fla.
B. L. Gable, New York, N. Y.
F. L. Skelly, Orlando, Fla.
B. W. Skinner, Dunedin, Fla.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

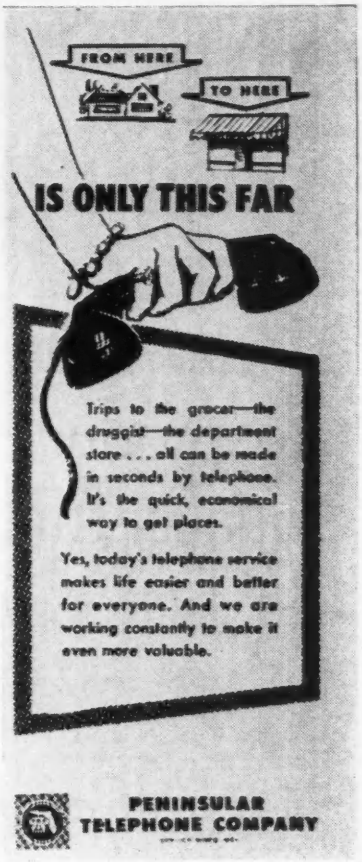
None.

4 That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holders appears upon the books of the company as trustee or in any other fiducary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold than that of a bona fide owner.

Sworn to and subscribed before me this 29th day of September, 1956.

S. LLOYD FRISBIE, Bus. Mgr.

HOMER T. PYLE, Notary Public
My commission expires Jan. 15, 1960.

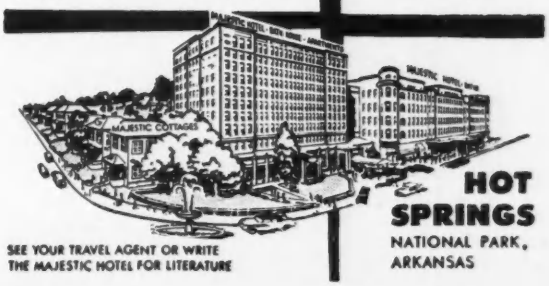

FROM HERE
TO HERE
IS ONLY THIS FAR
Trips to the grocer—the druggist—the department store . . . all can be made in seconds by telephone. It's the quick, economical way to get places.
Yes, today's telephone service makes life easier and better for everyone. And we are working constantly to make it even more valuable.
PENINSULAR TELEPHONE COMPANY

TRI-COUNTY
Grove Service, Inc.
1067 S. King Ave.
Lakeland, Florida
GROVE CARETAKING
. . . and . . .
COMPLETE GROVE MANAGEMENT
Telephone
Lakeland MUtual
4-1254

BATHE
YOUR WAY to HEALTH

Millions have taken the baths at Hot Springs—America's only health resort with natural thermal waters under the regulation of the Director of the Nat'l. Park Service, U.S Dept. of the Interior —and, countless people have testified to the magic qualities of these world-famous baths. You, too, can find relief for jangled nerves, aching muscles, stiff joints, hardening of the arteries, and, yes, even rheumatism and arthritis.

THE Majestic
HOTEL & BATHS
From $3 per day single
$4.50 per day double
And you can budget your meals at $4.50 a day



SEE YOUR TRAVEL AGENT OR WRITE THE MAJESTIC HOTEL FOR LITERATURE

HOT SPRINGS
NATIONAL PARK, ARKANSAS

There Is No Secret To The Production Of Fine Crops . . .

Proper diet will enable your trees to produce the best volume of high quality fruit . . . and will enable them to better resist the ravages of bad weather and pests.

Growers all over Florida will vouch for the effectiveness of our fertilizers and soundness of the statement that

Lyons Fertilizers
Produce Maximum Crops
of Finest Quality

Lyons Fertilizer Company

Phone 43-101

TAMPA, FLORIDA